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ABSTRACT

The results of a 3-year project that developed a practical program for the wide-scale implementation of behavior modification in urban schools are presented in this paper. The major outcomes of the project were (a) a practical, cost-effective behavior modification program that reduces discipline problems, increases student motivation, and accelerates academic achievement; (b) an effective and low-cost teacher training system in the utilization of behavior modification techniques; and (c) a model for exporting the program that is cost effective and that provides the consumer school with the capability to train, support, and monitor the program with minimum outside assistance. Section one of the paper describes the operation of the behavior modification program in 20 schools in Atlanta, Georgia and includes data on its programmatic and economic effectiveness. The second section describes the procedures used to train the teachers involved in the project. The final section is a discussion of the role of the school principal in the school-wide implementation of behavior modification. (Author/HMD)

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PROJECT SUCCESS ENVIRONMENT: A PRACTICAL PROGRAM FOR IMPLEMENTING BEHAVIOR MODIFICATION IN URBAN ELEMENTARY SCHOOLS

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An Experimental Session delivered at the National Convention of the American Educational Research Association, 1974

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Introduction.

Over the last decade, the principles of operant conditioning have been tested in a variety of educational settings--in special education classes, in ghetto schools, in preschools and high schools, just to name a few. A great deal of this research has been published. For example, fully one half of the articles appearing in the Journal of Applied Behavior Analysis since its inception have dealt with the application of Behavior Modification in educational settings. As early as 1971, sufficient evidence had accumulated to prompt Donald Baer to conclude that the principles of behavior modification can be used to modify almost any behavior that can be specified objectively. Clearly, both proponents and critics agree that these procedures can produce dramatic changes in a variety of important student and teacher behaviors.

It was also clear in the early seventies that many educators wanted to see behavior modification adopted on a wide scale in public education. However, there were still at that time a number of problems to be solved before these principles could be implemented extensively. The problems were mostly practical and economical. The behavior modification programs reported as so successful in the literature were often quite expensive. Many times the pupil-teacher ratio was reduced by adding costly teacher aides; tangible rewards were used, new and expensive curriculum materials were involved, teacher training was often costly and so on. The cost for putting a child through Bushell's Behavior Modification Program for Follow Through in 1970 was $728. Bushell estimated that this cost could be reduced to $300 when the program was beyond the development stage (Goodall, 1971). Even the

latter figure, however, is not one that would attract any school or school system that did not have heavy federal support. As Goodall put it in his Psychology Today article (Goodall, 1971): The methods of behavior modification . . ."must be translated into viable programs that the public will find worth the cost." Otherwise, . . ."no amount of shaping will keep the public from spending its tokens elsewhere."

Project Success Environment was funded in 1970 by Title III to develop just the sort of viable, cost effective, program of behavior modification that Goodall was talking about. The setting for the project was the inner city of Atlanta with considerable discipline problems and a generally low rate of academic gain. One major goal of the project was to develop a behavior modification program that could be used in regular classrooms with a single teacher and 25-35 children. The emphasis of the program was to be on generating successful experiences for the students in the classroom and then backing up these successes with a token reinforcement system.

However, once we had established that such a program could produce desirable results such as better classroom management and more rapid academic gain, we wanted to develop an effective way to train new teachers to employ the essential components of the program at a cost that other schools and school systems could afford. Finally, our own experience indicated that teachers did not always continue using our program even though it produced desirable results. In short, when project staff withdrew support from a trained teacher for awhile, the teacher often began to revert to old habits. Thus, we also wished to develop a system for maintaining the program in a

school once the teachers were trained and the program implemented. It seemed clear that any systematic use of behavior modification in the schools on a wide-scale would depend upon whether and if school principals could train teachers, implement, and then monitor the system in their schools.

The purpose of this experimental session at AERA is to present to you some of the details of our project--the behavior modification program itself; data on how well it works; how much it costs; our procedures for training teachers; and finally, the role of the principal in the implementation of the program school-wide. My colleagues and I would first like to present some of the details of the program and then open the floor for discussion of any aspects of it that interest you. First, I will describe the basic behavior modification system that is used and present some of the data we have collected on its effectiveness. Then, Dr. Scott Persons, research assistant for the project, will present the details of our plan for training teachers; finally, Marion Thompson, project director and a school principal in Atlanta, will discuss the principal model for school-wide application of the program.

AN EFFECTIVE AND COMPREHENSIVE BEHAVIOR MODIFICATION PROGRAM FOR APPLICATION SCHOOL-WIDE IN URBAN ELEMENTARY SCHOOLS

Howard A. Rollins, Jr.

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Project Success Environment was funded in 1970 to solve some of the problems of public education in the inner city. Many of the children in these inner city classrooms in Atlanta and elsewhere are chronically absent from school, disruptive when they come and more often than not perform poorly in academics. Many are slow readers; some can not read at all. Most are far behind their suburban peers academically. In general, urban children do not have the skills, either social or academic, necessary for success in a traditional classroom. Our solution to this range of problems was first to change the philosophy of the teacher and then to provide the teacher with a better way to organize the classroom and a more powerful way to motivate the children.

It seems to us that many of the behavioral problems occurring in the classroom are attributable to the teacher's philosophy about discipline. Many inner-city teachers (and many teachers in general, for that matter) believe that punishment is the only answer to disruptive children. As a consequence, inner city classrooms are often very negative with the teacher delivering fairly heavy amounts of punishment in the form of critical verbal comments, loss of privilege, or physical contact. In many of the classes in which we have observed, teachers rarely reinforce any behavior. Thus, our program stresses the role of teacher attention and reinforcement for appropriate behavior and attempts to minimize as much as possible the importance

of punishment in any form. For this reason, we have named the program Positive Contingency Management. Many teachers find it difficult to believe that such an approach will work and one of our biggest problems is often altering teacher attitude about punishment and reward.

Thus, following suggestions of Becker, Engelmann and Thomas (1971), our program is focused upon reinforcing acceptable social and academic behaviors. Teachers are encouraged to attend to, praise, and show affection to children when they behave appropriately and except under extreme circumstances to ignore inappropriate behaviors. Teachers determine for themselves, a set of four or five simple, positively stated rules such as "pay attention" that children are to follow and are consistently reinforced by the teacher. Each teacher is asked to concentrate on the behaviors specified in the rules for several weeks before worrying about other rules or academics.

In order to provide powerful reinforcers for each child in a class, a token reinforcement system is the backbone of the program. Children in elementary classes (up to fifth grade) earn checks on a multi-squared card while older children (sixth and eighth grades) receive theater tickets for following classroom rules and for successful completion of academic assignments. A card filled with checks or a specified number of tickets can be traded for a variety of reinforcers. In the beginning, we used both tangibles such as candy, small toys, trinkets, and school supplies and activities such as leading the line to lunch, helping the teacher, and free time to play. However by the end of the second year, we were convinced that inner-city children could be motivated by activity reinforcers alone and that tangibles

were unnecessary and often caused problems. So in the third and subsequent years, students were reinforced primarily with activity reinforcers.

For the first day or so in all project classes children receive small pieces of candy (usually M & M's) with each token. However, all filled cards and tickets are traded from the beginning for activities, either tasks available in the class or free time in a special activity room. The activity rooms contain a number of different games and toys suitable for the age groups involved. Further, an attempt is made to maintain interest in the room by introducing novel reinforcers into the room on an unpredicatable basis. Initially, children earn twenty minutes of time in the room for 25 tokens. However, the cost to enter the room increases gradually over the first five to six weeks of school.

Several other changes occur over the first few weeks of operation under the program. Teachers are told to reinforce appropriate social behaviors with high frequency for the first few weeks. When the children are behaving well, the frequency of reinforcement for simple rule following is lowered so that children are on a fairly thin and unpredictable schedule for these behaviors. At the same time, tokens are made contingent on academic behavior (e.g., correct responses, completion of skill sheets with a certain accuracy level). Thus, the number of tokens required to earn a reinforcer increases while the amount of work required to earn a token also increases. The end goal is for each child who works reasonably hard to fill a card and thus gain entrance to the activity room at least once a week (and that most children would enter two times a week). Finally, an attempt is made to add novelty to the reinforcement system by occasionally offering special reinforcers such as field

trips, movies, parties, and occasional food items such as popcorn. These surprises appear to be necessary in order to maintain children's interest in the system.

Our behavior modification program also includes modification of the physical arrangement of the classroom. Most classrooms continue to be arranged in the traditional fashion with neat rows of desks each facing the teacher's desk at the front of the room. This format is good for lecturing to the whole class but is not very well-suited to teaching individuals or small groups. It is our feeling that teachers can not effectively teach new skills unless this is done in small groups where each child is taught, tested for learning and reinforced for approximations of the desired behavior. Thus, the classroom was rearranged following the model introduced by Hewitt, Taylor, and Artuso in special education classes. The physical arrangement used in project classes is shown in Figure 1.

A class of as many as 30 to 35 children is divided into three groups usually by reading level. At any given time in a particular content area such as reading, each group is assigned to one of three activities. One group works on new skills with the teacher. A second group works on some assigned seat work that requires little or no supervision. The seat work is intended to give children practice on skills learned earlier with the teacher. Children in the third group are assigned systematically to the "interest stations" placed around the perifery of the room. Each instructional period (around 30 minutes), groups of children rotate from one activity

to another until each group has participated in each activity. Thus, a given content area would be covered in three instructional units. For the most part, the interest stations are related to the curriculum. The exploratory station might have direction following games or tasks for the student to complete; the games and puzzles station, a word game; communications, a language master; and so on. The idea is to interest children in academic work that requires minimal teacher supervision.

The token reinforcement system merges very nicely with this physical arrangement. The teacher works with the skills group and frequently administers tokens and attention for appropriate academic responses. The idea is that new learning is occurring in the skills group and that such new learning should be reinforced with high frequency. The other two groups, on the other hand, are supposed to work without direction from the teacher. These students, therefore, should be shaped to work without supervision, then be placed on an intermittent schedule of reinforcement. All project teachers are trained to follow this general plan. The end result is that the teacher has considerable free time to spend with the group learning new material.

The rotation of the groups through these three areas occurs in both reading and math. However, different groupings of children might be used for these two content areas. Where social studies and science were a part of the curriculum the teacher was free to use a more traditional lecture format, primarily because of a lack of materials easily used on an individual basis in these content areas. Whether grouping or lecturing, the token system remained in effect throughout the day in a project teacher's classes.

Finally, the curriculum in project classes was modified somewhat. Some commercial programmed materials were used and a number of skill sheets were created to enable the teachers to individualize the curriculum as much as possible. At the minimum, children in the three groups were to be at different points in the curriculum.

Program Evaluation. The behavior modification program I've just described was evaluated during the second and third years of funding. The major goal of the evaluation was to document that the program could reduce discipline problems and accelerate academic achievement. To this end, performance in project classes was compared to performance in non-project classes in the same school or in a nearby school serving the same population. Project teachers were trained during the summer preceding the second and third years so that all comparisons of project and control classes occurred after the program was underway. Two types of data were collected in both project and control classes: in-class behavioral data and achievement data. Trained observers collected data regularly on both teacher and student behaviors. The observation procedure is described in detail in an appendix so I won't go into it here. I should point out that the observational procedure produces high interrater reliability with correlations ranging from the .60's to the .90's and most above .80. Teachers were observed to determine if they had successfully adopted the behavior modification program. As a rough measure of program adoption, project teachers were expected to reinforce more often and punish less often than control teachers. The observers simply counted the number of reinforcements delivered to each student

in the class and the total number of punishments administered in 15 minutes. The behavioral data on teachers for both the second and third years of the project are presented in Table 1 of the handout (page 35). Observational data were collected on 16 project classes (Grades 1, 2, 3, 4, 6, and 8) and 14 control classes during the second year and on 20 project classes (Grades 1 - 6) during the third year. Thirty minute observations were taken twice weekly during the second year and twice monthly during the third year.

The results shown in Table 1 clearly indicate that project teachers reinforce much more often than control teachers. In fact, project teachers reinforced their students about 10 times as often as control teachers. This difference is, of course, statistically reliable. It is interesting to note that project teachers reinforced less in the third year of the project. This difference is due almost entirely to the experienced teachers remaining in the program for the third year. Experienced teachers reinforced less often particularly at the beginning of the year probably because they could obtain reasonable classroom control more quickly, and thus begin intermittent reinforcement more quickly, than teachers trying the system for the first time.

As shown in the bottom portion of Table 1, project teachers punished about one third as often as control teachers. This difference was also statistically reliable and held up for the entire school year.

Clearly, the program had a powerful effect on the behavior of participating teachers. As a consequence, project students received lots of teacher

attention and reinforcement for appropriate behavior and little punishment relative to what went on in at least 14 other classes in the same area. It was anticipated that student behaviors would be affected by this redirection of emphasis in the classroom. Two types of student behavior were observed during the same observational periods. First, the observer recorded the number of times any member of the class was disruptive, i.e., disturbed other children in the class. In addition, students were observed for 20 seconds each to determine how much time was spent on assigned academic tasks. Students were rated as involved (15 - 20 seconds on task), medium involved (5 -14 seconds on task), or uninvolved (0- 4 seconds on task) and the percentage of students involved in assigned tasks computed from these scores. Again, reliability data were collected regularly and indicated that our observers could reach high agreement on the performance of a class with the procedure described in the appendix. The data on these student behaviors in project and control classes are presented in Table 2 (see page 36 of the handout). The top three rows show the effects of the program on disruptive behavior. For the second year, students in project classes were approximately one-third as disruptive as students in control classes. This result held up across the entire school year and was statistically reliable. Disruptions in the third year were higher than in the second year but still remained about one half as high as in control classes. Most of the project teachers reported that the level of disruption was sufficiently low that discipline was no longer a problem and the principals of the three project schools reported fewer referrals from project teachers than occurred prior to program implementation.

The program also had dramatic effects on student involvement as indicated by the lower portion of Table 2. Project students were on the average over 85 percent involved in teacher assigned activities during Year 2 and exceeded 80 percent for all quarters of the third year. This represents about a 50 percent improvement over performance in control classes where the percentage of students involved never reached 60 (percentage involved is the ratio of all involved students plus one half the number of medium involved students to the total number of students in the class). Again, the difference between project and control classes was highly reliable.

These results were encouraging to us. They suggested that we could replicate other behavior modification studies showing differences in classroom behavior. While obtaining these behavioral changes was clearly a major goal of our project, we also wanted to document that the program accelerated academic achievement. In order to assess the effects of the program on achievement, both project and control classes were given the California Achievement Test (at reading level rather than grade level) as a pretest in the first month and a half of school and as a post test in April. For Year 2, the same control classes were used as those in which behavioral data were collected. For Year 3, children were randomly chosen from all classes at the appropriate grade levels in the control schools. The effects of program implementation on reading achievement are shown in Table 3. The body of the table shows the mean gain for each grade level in terms of grade equivalent. Students in project classes gained more in reading at every grade level with the exception of the third grade in the third year. Overall project students nearly doubled

the rate of gain of control students. The California Achievement Test is normed to a 10 month school year, but our testing occurred about 7 months apart. If you correct for this difference and ignore the fact that the test was given on reading level, then project students gained about one month for each month in the project, the expected rate for the total population. Statistical analyses indicated that project students reliably outgained control students overall in both years.

Comparable data on gains in arithemetic acheivement based again upon the California Achievement Test are shown in Table 4. Project students also outgained control students in arithmetic, at every grade level in Year 2 and for all but second grade for Year 3. Overall project students again gained about one month for each month between pre and post test and gained at almost twice the rate of controls in Year 2 and 1.5 times as fast in Year 3. These results were statistically reliable.

One final point about the evaluation of the project should be made. The data presented so far compare teachers who have been trained in the use of positive contingency management to control teachers <u>after</u> the training has taken place. It would be useful to know if teachers and students <u>change</u> as a result of training and implementation of the program. This type of data was difficult to collect primarily because teachers were often not identified until the summer and we felt compelled to train all of them in summer workshops. However, we do have some before/after training data on four teachers in the second year and on eight teachers at a school requesting training near the end of the second year. In-class observational data were collected on these teachers

and their students in the spring before training and then again in the fall after implementing the program. These data are presented in Table 5. Clearly, teachers change rather drastically as a result of the training, reinforcing at a much higher rate and punishing considerably less. In addition, students are less disruptive for both groups of observations and more involved in assigned tasks in the classes of the four original project teachers. These data indicate that it is the training and program implementation itself that produce changes between project and control classes and not some basic difference between the two groups.

The data I have presented to you is rather convincing. By the end of the second year, we were certain that positive contingency management was an effective alternative to the traditional approach to teaching. Students and teachers had better relationships; students liked school more even though better behaved; teachers reported that their job was less frustrating and more pleasant; and school principals were estatic over the changes in their schools. Most important, the system was clearly affecting academic achievement. Everyone from the state department on down to the teachers felt that the program was feasible for exportation to other schools.

One rather major obstacle remained in the way. The program was too expensive. Excluding research costs (testing, observations, data analysis, etc.) and development costs, positive contingency management still cost about $132 per pupil as implemented in Year 2. This figure while much lower than the estimate given by Bushell in 1971 remains too high for consideration by most schools and school systems. However, we were certain that we could reduce this

cost figure rather drastically by eliminating some of the frills (such as tangible rewards and special equipment) and by reducing the cost of training and initial implementation. Training for both the second and third years involved three to six week workshops conducted by project staff and consultants, a very expensive procedure, and implementation was accomplished with continuous supervision and assistance by project staff. It was our feeling that these services would have to be taken over by local school personnel. The first step toward that goal was to develop a way to quickly and effectively train teachers to use and implement the essentials of the program. Scott Persons is going to tell you of our efforts in this respect.

AN EFFECTIVE PLAN FOR TRAINING TEACHERS TO USE BEHAVIOR MODIFICATION

Scott Persons

Atlanta Public Schools

By the middle of our second year of operations, we were becoming confident that Positive Contingency Management was getting the job done for the teachers in the research base. And there was a growing fund of data to support this confidence. But, a great deal of time and money had been and were being expended to develop and implement Positive Contingency Management and make it work in 16 inner-city classrooms. The crucial question remained as to whether Positive Contingency Management could be exported to other classrooms in other schools at a reasonable cost and be effective there.

Just as we were becoming confident in our program and beginning to think about cost-effective exportation, we got a request from the principal of an elementary school in the same neighborhood where we were operating asking us to train her entire faculty of 14 teachers in the use of Positive Contingency Management. This was the first time someone had come to us and said: "Hey, I think you can help me. Will you?" And it came at just the right time.

We readily accepted the principal's request, and then stepped back to consider how to go about it. Exportation has two aspects: (1) the initial inservice training; and (2) the ongoing administration. I'm doing to deal with the initial teacher training (and our approach to ongoing administration will be discussed later). We knew going in that the kind of training we had given the teachers in the research base was not practical. We could not conduct

four- to six-week summer workshops for every school interested in Positive Contingency Management. Training would have to be quick and inexpensive. Moreover, at least in response to this first request, training would have to take place during the school year.

We considered approaches others had taken to training teachers in behavior modification techniques. There seem to be two basic approaches and both, we believe, have serious drawbacks. One approach is for the expert to work with each teacher individually over a period of time. This approach often works, but, it is not cost-effective.

The other approach is to teach a class or hold a workshop in behavior modification where the teachers are instructed as a group by an expert. Concepts such as Reinforcement, Punishment, Extinction, Premack's Principle, etc. are covered, and the teachers are told to pinpoint behaviors they wish to change, to cue responses, to use accelerating or decelerating consequences, to shape behavior using successive approximation's, to employ some kind of token reinforcement system, to collect data, to keep records, etc., etc. In the best of these workshops or classes, the teachers are shown films or demonstrations and given assignments to carry out back in their own classrooms. In this way they get to see and feel and even do it for themselves and behavior modification does not remain an abstraction. Nevertheless, even after a good workshop of this sort is over, if there is no ongoing supervision and feedback, most of the teachers will try it briefly if at all and soon drop it. To be sure, a few teachers who have the most energy and the most on the ball will go back to their classrooms and through trial and error set up a good program. But, their

number is not likely to be great enough for such a class or workshop to be a cost-effective approach to inservice teacher training.

What we have done is create a cost-effective combination of these two training approaches that can be carried out in less than a week. The training involves instruction in the theory tied to application in the classroom. It includes a classroom demonstration of Positive Contingency Management and opportunities for the trainee to practice the techniques under supervision and receive immediate feedback. I will be more specific later, but first I would like to quickly go over the changes that occurred in that first school we trained during our second year of operation. Hopefully, this way you will be impressed with our results and be more interested when I tell you how we got them.

Results

Consider Table 6 on page 40. These data represent the changes in student and teacher behavior at the school where we trained and in a control school where the teachers received neither training nor assistance of any kind. We collected in-class observational data at both schools for three weeks in January immediately before training and again for three weeks in March after Positive Contingency Management had been operational for approximately three weeks.

The data are reported in the American Educational Research Journal, Winter 1974, so I will not spend much time on them or on the methodology of analysis. Suffice it to say that it is evident in Table 6 that teachers who received training increased their delivery of positive events and decreased their delivery of negative events. This is to be expected. This is part of what

we were training them to do. Moreover, it is evident in Table 6 that the training procedure produced substantial changes in student behavior. Disruptive behaviors were cut in half and replaced with appropriate on-task behavior.

In summary: Three weeks after training, the level of behavior in the 14 classes was on the average only slightly below that of the behavior in the classes of our research base. These were certainly encouraging results, especially cutting disruptions in half, because excessive disruption was the reason our assistance had been requested originally. So, although we certainly made some mistakes (which I will discuss in a few moments) we successfully trained the teachers quickly and at low cost.

Method

The training was carried out over a five-day period. On the first two days, the teachers met with the project staff and several experienced project teachers for 1½ hours in the afternoon after school. During these two sessions, there was instruction in, and discussion of the principles of operant learning, which underly Positive Contingency Management. Prior to each session the teachers were asked to read selected chapters from Becker, Engelmann and Thomas' Teaching: A Course in Applied Psychology. We think this text is very readable and does the best job of tying the theory to the classroom situation.

We divided the teachers into three groups according to grade level taught, with each group lead by a member of the project staff and at least one experienced project teacher. Over the course of both sessions we covered chapters on: "Reinforcement, Punishment, and Extinction"; "Varieties of Reinforcers and

Punishers"; "When to Reinforce"; "Using Stronger Reinforcers"; "The Criticism Trap"; and "Punishment -- When To, How To, and Why Not To." There was some lecturing but we encouraged discussion, particularly dialogue between the trainees and the experienced project teachers. Having experienced teachers present who were informed and enthusiastic and had done it themselves was a tremendous help because we first of all and perhaps most importantly had to sell the program and change attitudes and expectations.

Each trainee spent the remaining three days of training in the classroom of an experienced project teacher observing, practicing, and receiving feedback. We asked the trainees to just observe for the first day and then on succeeding days to take over the class for 15 to 30 minutes at a time. During these practice periods the experienced teacher would take notes and later give advice and feedback. The feedback was based on the Behavior Management Checklist, an instrument that we developed for this purpose.

There was a final discussion session on the afternoon of the last day of training during which each teacher decided upon her own classroom rules and everyone agreed: (1) to use check marks on a card as tokens; (2) to establish 25 minutes of free play in an activity room as the reward for one filled card; and (3) to initially use punishment only to deal with behavior that was physically dangerous.

After training and after implementation had begun, the project staff did monitor the logistics of the system. We tried to phase ourselves out as quickly as we could, but in the beginning we were around to make sure that an activity room was set up and open on time, that enough cards were available, that if the

teacher had a question, there was someone to answer it. Also, about three weeks after implementation and before the post in-class observation data was collected, each of the project teachers visited in the classroom of the teacher she had helped train and gave individualized feedback and assistance for one morning. The total cost of training and implementation for this entire school was $3,242 or approximately $8.00 per pupil. Clearly, we now had both a cheaper and cost effective procedure.

Discussion

In the training workshops that the project staff has undertaken after this first attempt, we have made several minor changes. We have increased the time for discussion of the theory and reduced the time for observation. Trainees now see a slide presentation and observe one 30 minute demonstration by an experienced Positive Contingency Management teacher. We have also found that two opportunities to take over a class for 20 minutes and get immediate feedback is sufficient practice for most teachers if they get additional feedback when they introduce the program in their own classrooms. With these changes, the training can be completed in four ½ day sessions.

We know now that we made two serious mistakes in our first training workshop. First of all, we only trained the teachers, and there were a number of paraprofessional aides and other support personnel who were working at the school and did not receive the training. These people were often called on to participate in the program and, because we had not trained them, they often worked at cross purposes with the teachers. So, we now strongly recommend that assistant teachers, aides, and anyone else in a school who is interested, all receive the training.

The second and the most important mistake that we made was not insisting that the principal go through the training. Because the principal did not get the training, as we phased ourselves out to go about training other schools the program began to deteriorate.

The data in Table 7 reflect this deterioration. Two years after we had trained the faculty in Positive Contingency Management, we again collected in class observational data on four of the teachers who still taught at the school. Table 7 compares the behaviors in these four classes immediately before and after the training with the behavior in the same classes two years later. Because the sample is so small we did not run any statistical analyses, but the obvious return to form reflected in Table 7 confirmed our subjective judgment that behavior had regressed to where we found it originally. The frequency of teacher-administered punishments does appear to be reduced two years down the road but the variability of this measure makes such a conclusion tenuous at best. On the other three measures--reinforcements delivered, disruptions, and task involvement--the return to old habits is remarkably consistent.

This deterioration has not occurred in the classrooms within the project itself where there has been some supervision, feedback, and support either from project personnel or local school personnel. In our opinion, backsliding will not occur if the teachers get consistent support from administrators in their school. We believe that the school principal is the best qualified person to provide this backup support. We have taken steps to demonstrate that the principal can assume this essential role of ongoing administrator of the system. Marion Thompson, principal of Grant Park Elementary school in Atlanta and Director of Project Success Environment will discuss our attempts to engage the principal in the program.

THE PRINCIPAL: A KEY TO THE SUCCESSFUL EXPORTATION OF BEHAVIOR MODIFICATION PROGRAMS TO OTHER SCHOOLS

Marion Thompson

Atlanta Public Schools

Events of the past ten years have placed the local school administrator in an all but untenable position within the organizational structure of numerous school systems. The American Federation of Teachers has made steady progress in attracting new membership in the nation's larger districts. This group excludes administrative participation of any sort. The National Education Association has all but excluded participation in worthwhile activities by any person other than classroom teachers. One of the two national principal's organizations is openly discussing receivership. The story goes on and on. This brief recounting of certain events somewhat illustrates the changing roles and values that are occurring throughout the nation, within the framework of public education.

Obviously, at some point downstream a compromise must be negotiated. During the interim, however, what occurs? Does the local school administrator continue to function in the classic authoritarian role? Handing out "demerits" to pupils and teachers alike--all too often serving as a punitive father figure.

In the meantime, the principal is informed, and often in no uncertain terms, that while his role may be up for grabs his responsibilities are even more precisely delineated. You have heard of job description? So have I. We also have computers in Atlanta--and we have "taught" our computers to count--tables, chairs, playground balls and even handle attendance to mention a few of

the more important tasks removed from the shoulders of the principal. Within this context, and in light of the various power struggles that are presently occurring, how does a man or woman function effectively in a leadership capacity? I would like to discuss one way with you today.

In any school, especially an elementary school, the principal plays a crucial role in determining how--or if--learning goes on. More than any other person the principal is responsible for creating school morale. He is responsible for welding 15 to 30 teachers into a unified team enthusiastic about teaching and for creating a climate where students have positive feelings about their work. Charles Silberman (1970) underlines this point in Crisis in the Classroom; he cites three Harlem schools where the students "are having a full rich, varied, happy school experience" despite being located in an area where students are expected to be indifferent to school at best. Silberman attributes the relaxed atmosphere of the schools and the high level of academic achievement directly to the principals: all three "hold themselves and their teachers accountable if their students fail." The principal's importance to his school is officially recognized by many major school systems. According to the Atlanta Board of Education's Personnel Policies (1972), it is the principal's function "to execute the policies established by the school system" and "to supervise classroom work of teachers."

Recognition and acceptance of a role, however, does not necessarily make playing it possible. Several obstacles stand in the principal's way. A major difficulty is the traditional relationship of the principal to the classroom teacher. All too often, the principal is perceived as an authoritarian figure

meting out discipline to students and teachers alike: typically, the principal is not perceived as being directly involved with the teachers in the classroom, but as monitoring teacher problems with students and/or parents, evaluating teacher performance by how many problems they have. In The Culture of the School and the Problem of Change S. B. Sarason (1971) sums up the typical teacher's view of the principal: a housekeeper, someone to keep attendance, order supplies, and handle behavior problems and sick children. Generally speaking, "the presence of the principal in a classroom. . .is experienced by the teacher with anxiety and/or hostility."

Any principal's attempt to serve as an instigator of change is almost certain to be further complicated by the relative isolation of the classroom teacher, what Goodlad and Klein refer to as the "inviolate status of the classroom." For most teachers, the classroom is a private domain, and they do not relish intrusion of any kind. Though they are originally forced into absolute aloneness by the traditional school structure, where they are acutely aware of "not being supported by someone who knows about their work, is sympathetic to it, wants to help and indeed does help," many teachers eventually come to cherish their mode of functioning in their own particular vacuum. The Lonely Teacher by Knoblock and Goldstein (1971) recounts numerous examples of this teacher behavior. Then they rigidly resist change. Creating a unified effort throughout the school under these circumstances can be a Herculean task.

But suppose a principal and his staff surmount all these difficulties. They get it together and they're ready to go. The question is, "Where?" Two major movements in education today either involve developing open classrooms or utilizing the principles of behavior psychology. For a typical

principal, either approach can be difficult, if not impossible, to implement. The open classroom typically requires a complete revision of curriculum, a reversal of traditional methods of classroom management, intensive planning and in-service training, and a large amount of new classroom equipment. Implementing such a program necessitates a tremendous amount of intensive work on the part of the entire staff, and most principals have neither the time nor the resources required. A behavior program, too, typically entails all kinds of difficulties. Most programs using behavior modification are planned and directed by highly-paid specialists who first train teachers individually, then are regularly available to provide feedback and suggest changes on an individual basis. The effectiveness of such programs too often depends upon the interaction between the individual--or isolated--teacher and the specialist; rarely introduced on a school-wide basis, they do not typically produce unity of effort within a school. And when funds to pay the consultant run out, the program frequently fades away.

We have spent the past three and one half years trying to come up with a solution to this problem by developing a cost-effective system which changes the educational climate of a school but does not require expensive consultant services. Three years of planning, experimentation, and intensive evaluation culminate in Positive Contingency Management, an innovative program that helps a teacher organize her own classroom behavior, her students', and the classroom itself. This technique has the added advantage that once it is installed it can be adapted to several different types of school programs.

But most importnat, it is a technique that is manageable by a single

administrator. We have attempted to export the system solely through principals. A principal, accompanied by two of his teachers, comes to Atlanta for a four day workshop where he receives intensive training in the theoretical and practical aspects of the program. This training consists essentially of the same training that we give teachers plus additional training designed to enable the principal to return to his school to train his own teachers and to administer the program unassisted. Principals are given a training manual and intensive training in its use.

The classroom design and the modified curriculum are essentially adjuncts to the reinforcement system, designed to make it feasible by making it easier for the teacher to manage. Though the principal explains what is required in each area, these two components are essentially the teacher's province. The reinforcement system itself, the heart of the success technique, is the principal's particular responsibility. The system is based on a double premise: first, behavior followed by pleasant consequences is more likely to be repeated; second, nothing succeeds like success. Failure--whether academic or social--is something only successful people work to avoid; someone who's never known how good it feels to succeed can't possibly be motivated by the possibility of success. The reinforcement system is designed to make success a reality for every child.

Making the reinforcement system work requires the principal to do more than train his teachers in the theoretical and practical aspects of the technique. He must also monitor the system throughout the year, providing feedback to individual teachers on a regular basis. He is also responsible

for procuring the hardware required for the system. Reduced to its simpliest form, the system is a token economy. When pupils exhibit desired behavior, they receive positive reinforcement--a tangible reward like a checkmark or ticket--coupled with verbal praise. They then exchange the tokens for rewards. What the students can trade for depends upon the school. Some schools make tangible rewards--inexpensive items like toy watches, comic books, and yo-yo's--available to students for a brief period, then switch to non-tangibles rewards. Other schools move directly into non-tangibles. Students buy either special classroom privileges like leading the line to lunch and watering the plants, or they buy free time in a special activity room stocked with games and toys especially appealing to students.

To a principal completely absorbed in the traditional concept of the principal's role, the added responsibility of administering the system might seem overwhelming. But the system actually has a liberating effect. Because it reduces discipline problems to a minimum, it releases the principal from the rigid authoritarian role required of the disciplinarian. The principal is then free to devote himself to the positive elements of administering a school--interaction with teachers and students.

In addition to liberating the principal from a rigid authoritarian role, the reinforcement system makes a school-wide approach to classroom management feasible without unduly restricting the teacher. All teachers reward desired behavior and ignore undesired behavior. And they all administer the rewards in specified ways. But within these limits each teacher is free to decide on her own classroom rules of conduct (desired behavior) and to use her own

individual teaching style as long as it is compatible with the technique. The system further liberates the teacher by providing for the accountability of the principal. When the success technique is introduced, the principal makes clear that the teacher will be expected to maximize success and minimize failure and that part of this effort will involve behaving toward students in specific ways. He also makes clear that to help the teachers master and maintain these ways they will be regularly observed and evaluated for those specific ways of interacting with students. The Behavior Management Checklist which was mentioned earlier by Scott Persons, is used to provide this feedback. The teachers then know precisely what is expected of them; there is no question of their being evaluated on the basis of the principal's whim. The principal on the other hand, knows exactly what to look for in a teacher's classroom behavior; he doesn't have to make or defend individual value judgments; he can refer to objective standards for evaluation.

Thus, we were and are convinced that principals can train their teachers to use Positive Contingency Management and then administer the system once underway. In this our fourth year of project funding, we have attempted to prove that we could train principals in this fashion and that this training would result in the same sorts of changes in teacher and student behaviors that we have so consistently observed in our own project classes. We have trained a number of principals this year and a few of them have volunteered to allow us to collect in class data on their teachers. To date, we have been able to gather such data on only one school--an elementary school in a system just north of Atlanta. Observations were collected on eight teachers

in this school for several weeks prior to their training (but after the principal had been trained) and for several weeks following training and implementation. It is important to note that the project staff trained the principal and two of his teachers in Atlanta in a four day workshop, but that the training of the remaining teachers at his school and the implementation of the program were accomplished without any assistance from project staff. The results of this implementation are presented in Table 8. As you can see, teachers in this school reinforced more and punished less after training than before. More importantly, students became less disruptive and more involved in academic work. Of the total of eight teachers observed in this school, seven had positive changes in their classes. Unfortunately, we do not have evidence that this principal will be able to keep the system going for any length of time but we have a growing confidence that this will happen. In the three original target schools in Atlanta, the project continues to function in the fourth year in spite of the fact that the project staff are no longer available to provide assistance. In those schools the principal has readily taken over the task of administering the system. We have just recently gone back to collect additional in-class data on teachers in these schools and found that these teachers are as successful now as they were the last two years.

As a result of our research endeavor, I could share numerous facts and figures with you. However, my colleagues have already dealt rather heavily with the statistical side. Perhaps the most important single conclusion that can be drawn from our work over the past four years is one that can not be

proven with hard, factual data. I refer to a change in teacher expectation. I would be remiss in concluding this presentation if I did not share with you my strong and very real belief that we have realized more change in student growth as a direct result of this attitudinal change on the part of the teacher than any of us realize. Project teachers no longer harbor deep feelings of doubt concerning the potential growth of pupils in their charge. Over and over each member of our team has experienced situations where pupils were expected to succeed, and almost without exception they did. Yes, I am submitting that in the words of more than one popular song "Thinking Can Make It So."

The cost of introducing the success technique into a school depends upon several factors, specifically whether or not new curriculum materials are added and the extent to which tangible rewards are used. The maximum installation cost in a typical elementary school of 400 pupils is $33.48 per pupil and the minimum is $3.36. The maximum cost of continuation is $21.25 and the minimum is $.75. The maximum Year 2 cost includes employing a paraprofessional and spending over $3,000.00 for individualized instructional materials.

It's cost-effective and it changes student behavior, both their conduct behavior and their behavior in relation to their work. But the most valuable contribution that the success technique makes to a school is the change it creates in the way teachers and administrators interact with each other. It minimizes the isolation teachers feel from their principal and from each other. It allows the principal to be more than a housekeeper and disciplinarian; his role as administrator of the technique allows him to be fully in control of all aspects of the school without being threatening or domineering. Once

the success technique is operative, the principal is able to maintain a school environment to be proud of, one where teachers, students and administrators can be engaged in a cooperative venture, human and humane with each other.

Project Success has been a successful research endeavor and developmental Title III effort. The statistics are quite impressive. As described earlier pupils have learned more. And they feel good about this learning! Their teachers enjoy teaching more! The principal enjoys being principal more! For all concerned, school has become a more pleasant place to learn and work. But all too often Title III programs, whatever their successes, are simply phased out at the end of the funding period. There is evidence that PSE has avoided this fate.

The 1974 budget for the Atlanta public schools includes $90,000 to establish a minimum of 10 "additional" Project Success schools--including at least one senior high school. In addition, PSE has been awarded a contract of $169,000 by the Georgia Department of Education. This contract involves training principals and teachers from all areas of the state to implement the success technique in local school situations. As of this date we have had over 100 administrators and approximately 190 teachers and others participate in 16 workshops held since September. We will conduct two more prior to mid-May. And we now have six Success Schools fully operational.

The local education agency has reacted in cold hard cash. The State of Georgia has expressed confidence in the results of the comprehensive success effort by awarding the project a fourth year contract. (This action is quite

unique within the realms of Title III funding.) It is encouraging to realize that several highly responsible officials agree, including recognition of the project as one of the top three exemplary programs in the nation during 1973.

Figure 1

Floorplan of a Success Classroom

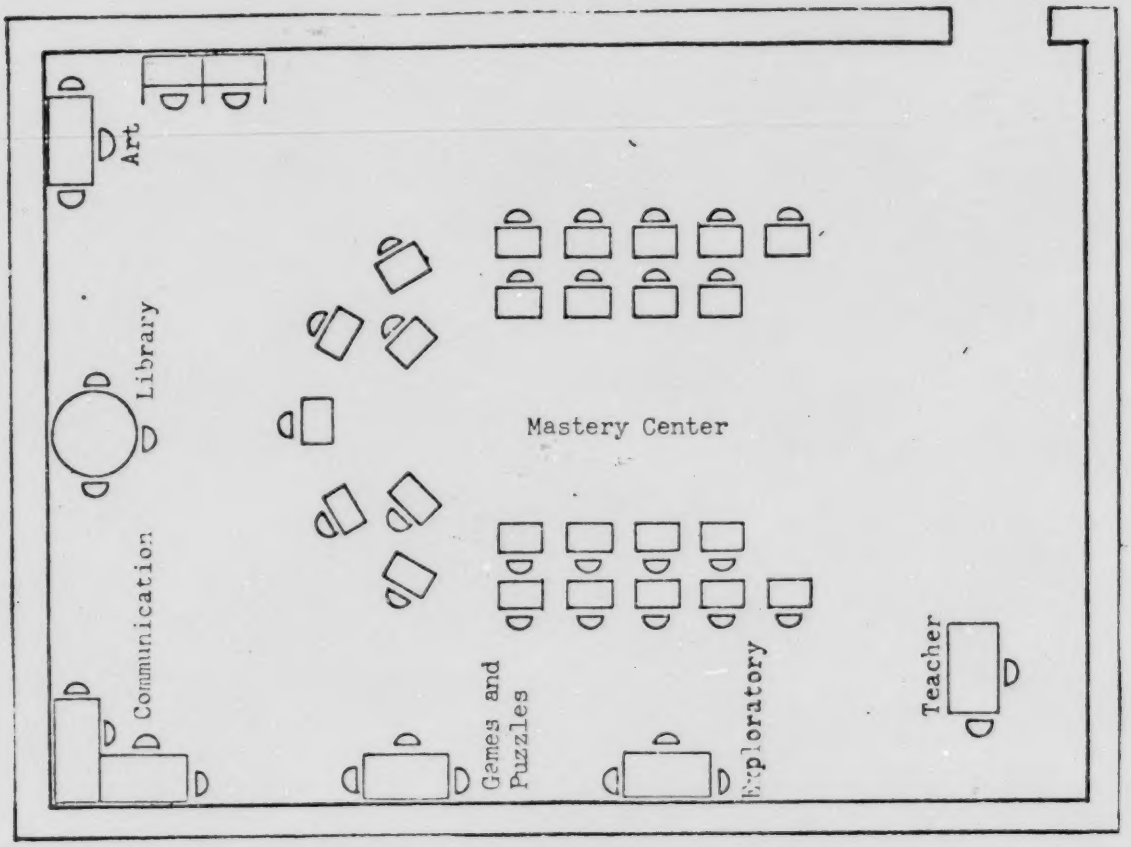

Table 1

Mean Number of Reinforcements Delivered Per Student and Mean Total Punishments Delivered Per Fifteen Minute Observation Period In Project and Control Classes For each Quarter of the School Year*

Measure	Treatment	Year	Quarter 1	2	3	4
Mean Reinforcement Per Student	Project	2	1.41	1.23	0.84	0.87
	Project	3	0.85	0.64	0.55	0.38
	Control	2	0.09	0.07	0.09	0.11
Mean Total Punishments	Project	2	0.47	0.41	0.32	0.54
	Project	3	0.33	0.39	0.10	0.18
	Control	2	1.72	1.25	1.07	1.18

* Each data point represents a mean for all observations in each class each quarter. There were 16 project classes in Year 2; 20 project classes in Year 3. There were 14 control classes in Year 2. Control classes were from the same grades at a nearby elementary school and in the same middle school as the project classes.

Table 2

Mean Number of Disruptions Per Student and Mean Percentage of Students Involved in Assigned Tasks During a 15 minute Observation Period. Data Are Presented for Project and Control Classes for Each Quarter of Year 2 and Year 3.

Measure	Treatment	Year	Quarter 1	2	3	4
Mean Number of Disruptions per Student	Project	2	0.38	0.37	0.39	0.36
	Project	3	0.50	0.62	0.46	0.57
	Control	2	1.06	1.03	1.64	1.20
Mean Percentage of Students Involved	Project	2	85.58	92.75	88.94	89.91
	Project	3	80.50	81.25	84.38	84.38
	Control	2	59.00	59.50	55.00	59.38

Table 3

Mean Gain in Total Reading Grade Equivalent for Seven Months of Years 2 and 3 for Project and Control Students.

Grade Level	Mean Gain in Total Reading Year 2 Project	n	Control	n	Year 3 Project	n	Control	n
1st*	1.80	46	1.55	34	1.80	45	1.40	33
2nd	1.18	46	0.65	40	0.90	28	0.50	39
3rd	0.61	61	0.31	34	0.30	22	0.50	14
4th	0.62	46	0.57	23	0.70	95	0.30	35
5th	----	--	----	--	----	--	----	--
6th	0.50	57	0.39	37	0.70	76	0.50	51
8th	0.62	77	0.18	117	----	--	----	--
Mean	0.69		0.34		0.70		0.46	

* Scores for first grade represent grade equivalent on post test rather than gain.

Table 4

Mean Gain in Total Arithmetic Grade Equivalent for Seven Months of Years 2 and 3 for Project and Control Students.

Grade Level	Mean Gain in Total Arithmetic Year 2 Project	n	Control	n	Year 3 Project	n	Control	n
1st*	1.70	35	1.40	34	1.70	45	1.60	33
2nd	0.56	46	0.40	43	0.30	28	0.40	39
3rd	0.58	64	0.42	30	0.90	22	0.60	14
4th	0.68	43	0.43	50	0.80	95	0.50	35
5th	----	--	----	--	0.70	40	0.40	39
6th	0.[illegible]	55	0.30	28	0.70	76	0.60	51
8th	0.51	69	0.40	104	----	--	----	--
Mean	0.65		0.39		0.73		0.52	

* First grade scores are post test grade equivalent rather than gain.

Table 5

In Class Performance of Two Groups of Project Teachers and Their Students Before Training and After Training and Implementation

		Before Training	After Training
Mean Reinforcements per Student	Group 1	0.19	1.25
	Group 2	0.16	0.61
Mean Total Punishments	Group 1	0.0	0.20
	Group 2	0.95	0.80
Mean Disruptions	Group 1	1.14	0.14
	Group 2	0.99	0.46
Mean Percentage Students Involved	Group 1	59.7	95.5
	Group 2	80	81

Table 6

In Class Performance of Teachers and Students Both Before Training and After Training and Implementation of Positive Contingency Management. Data is Also Included on a Group of Control Teachers During the Same Time Period.

Measure	Treatment	Before Training	After Training	Change
Mean Reinforcements Per Student	Project	0.29	0.69	0.40
	Control	0.09	0.03	-0.06
Mean Total Punishments	Project	2.50	0.82	1.68
	Control	0.49	0.31	0.18
Mean Number of Student Disruptions	Project	1.13	0.56	0.57
	Control	1.19	1.14	0.05
Mean Percentage of Students Involved	Project	67.4	84.5	17.1
	Control	55.2	58.5	3.3

Table 7

Behavior in Four Classes Before Training,

After Training, and Two Years Later

Behavior	Before Training	After Training	Two Years Later
Mean Number of Reinforcements per Student	0.09	0.52	0.09
Mean Total Punishments	0.93	0.00	0.13
Mean Number of Disruptions per Student	0.44	0.10	0.38
Mean Percentage of Students Involved	77.4	91.6	76.8

Table 8

In Class Observational Data on Eight Teachers Before and After Training and Implementation of Positive Contingency Management by their Principal.

	Before	After
Mean Reinforcements per Students	0.10	0.64
Mean Total Punishments	0.30	0.10
Mean Disruptions per Student	0.70	0.39
Mean Percentage Involved	73.0	83.0

APPENDIX

IN-CLASS OBSERVATION PROCEDURE

A complete observation requires approximately 30 minutes during which the class is engaged in academic activity. If for some reason (such as a message being delivered or the teacher being called out of the classroom) academic activity is interrupted, the observation is suspended until teaching resumes. The observer locates himself to one side, but not in back of the classroom, and refrains from interacting with either the teacher or the students during an observation.

Within the 30 minute observation period, two different observation procedures (described in detail below) are used. The teacher's use of positive and negative events as well as the frequency of student disruptions are observed using one procedure; student attention is observed using another method. The observer begins recording positive events, negative events, and disruptions for exactly 7 ½ minutes, switches to attention for approximately 15 minutes, and then completed the observation of positive and negative events and disruptions for a final 7½ minutes. The observation is split in order to obtain more typical samples of behavior.

The observer uses a stopwatch as a timing device and records the behaviors of interest on the IN-CLASS OBSERVATION (ICO) RECORD SHEET appended to this description. Before an observation begins, the number of students present is recorded in the appropriate space at the top right of the sheet.

Teacher Administered Positive and Negative Events, and Student Disruptions

For exactly 7½ minutes on two occasions (a total of 15 minutes), the observer counts and records each instance of the teacher administering either

a positive or a negative event and each instance of student disruption, all at the same time; however, the guidelines for recording each of these three behaviors are presented separately as follows:

Positive events. The observer records every instance in which the teacher administers a positive event by circling the lowest uncircled number in the appropriate box of the ICO RECORD SHEET. The average number of positive events administered per student in a 15-minute period constitutes the criterion measure, and this ratio is obtained by dividing the total number of positive events administered by the number of students present during the observation. Teacher behaviors recorded as positive events are:

1. Verbal praise. Any verbal behavior on part of teacher that indicates approval, commendation, or achievement on the part of a child such as "good," "that's great," "fine job."
2. Granting privileges. Any teacher behavior which signifies that a child can perform a preferred task that is not readily available to all members of class, such as leading the line to lunch.
3. Positive physical contact. Physical contact between teacher and child initiated by teacher that appears pleasant, including embracing, patting on head or shoulder, holding arm, taking hand, kissing, etc.
4. Consumables and tokens. Delivery by teacher of a consumable such as candy or a token that can be traded for a consumable or a preferred activity.

Negative events. The observer records every instance in which the teacher administers a negative event by circling the lowest uncircled number in the appropriate box of the ICO RECORD SHEET. The total number of negative events administered in 15 minutes constitutes the criterion measure. Teacher behaviors recorded as negative events are:

1. Verbal criticism or sarcasm. Any verbal behavior on part of the teacher that indicates disapproval or condemnation of the behavior of a child such as "that's bad," "you're awful," "don't bother me," or "you think you're something, don't you."
2. Withdrawing privileges. Any teacher behavior signifying that a child can no longer perform a task that was once available to all children, such as not permitting a child to go to recess.
3. Isolation. Placing a child in a corner of the room or outside the room and thus out of the context of the class.
4. Aversive physical contact. Physical contact between teacher and child inititated by teacher that appears unpleasant, such as spanking, slapping, shaking, grabbing, etc.

Disruptions. The observer continually scans the entire class looking for instances of disruptive student behavior and recording each of them by circling the lowest uncircled number in the appropriate box of the ICO RECORD SHEET.

An instance of student behavior is recorded as disruptive if it includes: talking or being out of seat without permission; generating loud noises; and disturbing other students either verbally, or by means of physical contact,

or by handling another student's possessions. In general, disruption encompasses any unsolicited student behavior likely to distract other students from their assigned tasks. A single student is not recorded as disruptive more often than once every 10 seconds, i.e., continuing disruptive behavior on the part of a single student (such as fighting) is recorded no more than once per 10-second interval. The criterion measure is the average number of disruptions per student per 15 minutes, obtained by dividing the total number of disruptions recorded by the number of students present during the observation session.

Attention to Task

Attention to task is determined between observations of teacher behavior and student disruptions. Each student in the class is observed separately, one time only, for 20 seconds and classified as either involved, medium involved, or uninvolved. At the beginning of the 20 seconds a stopwatch is started and the observer begins counting the number of seconds that the student is not paying attention to his assigned academic task. If there is no assigned academic task, unless the student busies himself with some academic work, he is counted as being off-task. The counting of off-task seconds is most conveniently done on the fingers. The seconds of off-task behavior do not have to be sequential. At the end of 20 seconds, the number of off-task seconds is noted and the smallest uncircled number in the appropriate box of the ICO RECORD SHEET is circled. The appropriate box is determined by the number of seconds a given student is off-task, where each student observed is classified as INVOLVED (0 to 5 seconds off-task), MEDIUM INVOLVED (6 to 15 seconds off-task),

or UNINVOLVED (16 to 20 seconds off-task). It requires approximately 15 minutes to observe the attention to task of each student in a class of 30.

Observation of students who have been assigned non-academic tasks is not allowed. If a student is assigned a non-academic task throughout the time it takes to observe the remainder of the class, then that student is not observed for attention to task.

The total number of students recorded as involved is added to one half the number of students recorded as medium involved. The ratio of this sum to the total number of students observed for attention is used as an estimate of the percent of time the students are on-task and paying attention. This percentage constitutes the criterion measure.

IN-CLASS OBSERVATION (ICO) RECORDING SHEET

TEACHER: _____ A.M. P.M.

DATE: _____ NO. PRESENT: _____

TEACHER ADMINISTERED POSITIVE EVENTS											
1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60

NEGATIVE EVENTS			
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20

DISRUPTIONS														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90

ATTENTION TO TASK																	
INVOLVED (0-5)						MED. INVO. (6-14)						UNINVOLVED (16-20)					
1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
7	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30	25	26	27	28	29	30

NO. INVOLVED: _____ + 1/2 NO. MED. INVOLVED: _____ = _____ / NO. ON TASK

NO. ON TASK: _____ + NO. OBSERVED: _____ = _____ / % TIME INVOLVED

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